

## ORIGINAL ARTICLE

# Costs, Returns and Profitability of Brinjal in Latur district of Maharashtra

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### ABSTRACT

Present study was aimed to measure input use, costs, returns and profitability in Brinjal production of Latur district of Maharashtra state. In present investigation the sample of 60 Brinjal growers were selected from study area for which input-output data were collected based on kharif cropping season in the year 2014-15. Standard cost concept was used to study the cost of cultivation, to analyze the data in the present study tabular analysis, and frequency and percentage method were used. The results of study revealed that per hectare total cost with regards to Brinjal was Rs. 111892.42 while cost-A was Rs. 59990.58 and cost-B was Rs. 101126.42. The different measures of farm income were also estimated at their respective costs, output-input ratio and per quintal cost of production. Gross return was Rs. 242593.00. It was clear that, farm business income, family labour income and net profit were Rs. 182602.42, Rs. 141466.58 and Rs. 130700.58, respectively. It was clear that; Output-Input ratio was 2.16 in brinjal farm. Per quintal cost of production of brinjal was Rs. 599.60. Area, hired human labour, seed, nitrogen, machine labour and family human labour turned out to be significant.

**Key Words:** Cost, Returns, Profitability, Output-Input, Brinjal.

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### INTRODUCTION

Brinjal has origin in India. Its botanical name is *Solanum melongena* L. It belongs to family *Solanaceae*. Different varieties of brinjal from private sector are bioseed companies-brinjal trishul, Ankur-Ajay, Mauli-Vishal, Gaurav-Panchganga etc. In India, it is one of the most common, popular and principal vegetable crops grown throughout the country except higher altitudes. It is a versatile crop adapted to different agro-climatic regions and can be grown throughout the year. It is a perennial but grown commercially as an annual crop. A number of cultivars are grown in India, consumer preference being dependent upon fruit colour, size and shape. Brinjal fruit are available throughout the year. It is used in curry preparation giving the taste of non vegetable food. The Bhurta is common dish in North India, prepared from brinjal. Bhurta is also famous in Khandesh region of Maharashtra. Apart from this, it is used as medicine to cure toothache and for diabetic patient. Besides from fruit, leaves and seeds used in medicine. It has about 1.4 per cent protein, 4 per cent carbohydrate, 0.3 per cent fat, 0.3 per cent minerals and 1.3 per cent fibre. Vitamin C content in brinjal is around 6mg/100g and vitamin A is 30 I.U. White cultivars contain twice as much crude fibre as the purple and green cultivars. The amino acid content is more in the purple cultivars than the white varieties. On the contrary, potassium and chloride content is highest in green and lowest in purple variety. Sometimes brinjal fruits taste bitter which is due to the presence of glycoalkaloids, that are of wide occurrence in plants belonging to Solanaceae family. Vegetables play an important role in human diet because most of the vegetables are the important source of carbohydrates, proteins and vitamins which are required to maintain the good health of human. Hence, vegetables are the most important components of vegetarian diet of Indian population. During 2013-2014, area under brinjal in India was 711.3 thousand hectares, with production of 1357.8 million tones and the productivity 1.908 tones per hectare. During 2013-2014, area under brinjal in Maharashtra was 0.30 lakh hectare with production of 690.0 million tones and the productivity 2.30 tones per hectare.

## MATERIAL AND METHODS

Multistage sampling design was adopted in selection of district, tehsil, villages and brinjal growers. In first stage, Latur district was purposively selected. In second stage, Latur and Renapur tehsil of Latur district was selected on the basis of highest area under brinjal production. In third stage, five villages were selected on the basis of maximum area under brinjal cultivation. Thus, from five selected village size of sample was 60. In analytical techniques standard cost concept was used to study the cost of cultivation, to analyze the data in the present study tabular analysis, time series analysis, and frequency and percentage method were used.

### Cost concepts

Concept of Cost-A, Cost-B and Cost-C was used for calculating per hectare costs and returns from brinjal. Cost-A is actual expenses or direct expenses incurred by producer farmer from his pocket for the production of a particular crop. It includes the item namely hired human labour, bullock labour, machine labour, seedlings or grafts, fertilizer, manure, plant protection, land revenue, incidental charges, interest on working capital and depreciation on assets. Cost-B comprised of indirect expenses incurred by producer farmer for the production of a particular crop. It comprises of Cost-A plus, rental value of land, and interest on fixed capital. Cost-C includes the Cost-B plus, value of family labour.

## RESULTS AND DISCUSSION

### Costs and Returns from Brinjal Production

Physical inputs can be transformed in production of brinjal; the inputs can be converted in to monetary terms to know gross return. Per hectare costs and returns from brinjal were calculated as follows.

### Per hectare Physical Inputs used and Output from Brinjal Production

Per hectare physical inputs and output in brinjal production were calculated and presented in Table 1. The results revealed that, use of hired human labour in brinjal growers was 120.02 man days, use of bullock labour was 6.14 pair day and use of family human labour in brinjal growers was 53.83 man days. On an average use of bullock labour and machine labour was 6.14 pair day and 5.91 hours, respectively. Use of seed was 0.78 kg per hectare. Use of manure was 53.08 quintals per hectare. The average use of nitrogen, phosphorus and potash was 93.23 kg, 41.68 kg and 41.3 kg, respectively. Use of plant protection was 1.62 litres per hectare. The use of irrigation was 1515.19 m<sup>3</sup>. Regarding main produce was 186.61 quintals.

**Table No. 1. Per hectare physical inputs and output of brinjal production**

Sr. No.	Particulars	Unit	Quantity
	<b>Input</b>		
1.	Hired human labour	man day	120.02
2.	Bullock labour	pair day	6.14
3.	Machine labour	hour	5.91
4.	Seed	Kg	0.78
5.	Manure	Q	53.08
6.	Fertilizers	Kg	
a.	N		93.23
b.	P		41.68
c.	K		41.30
7.	Plant protection	Lit	1.62
8.	Irrigation	m <sup>3</sup>	1515.19
9.	Family human labour	man day	53.83
	<b>Output</b>		
10.	Main produce	Q	186.61

### Per Hectare Cost of Cultivation of Brinjal

Per hectare item wise expenditure in brinjal production was estimated and presented in Table 2. The results revealed that, total expenditure i.e. cost-C was Rs. 111892.42 in brinjal cultivation. Among the various items of expenditure, proportionate share of rental value of land was predominant as 36.07 per cent followed by hired human labour (21.45 per cent), family human labour (9.63 per cent), manure (7.13 per cent), seed (6.97 per cent), irrigation (3.68 per cent), fertilizer (3.57 per cent), plant protection (2.81 per cent), bullock labour (2.74 per cent), interest on working capital (2.20 per cent), machine labour (2.11 per cent). The share of Cost-A in total cost was 53.61 per cent in brinjal cultivation. The proportionate expenditure on Cost-B was found 90.37 per cent in brinjal cultivation, respectively.

**Table 2. Per hectare cost of Cultivation of Brinjal**

Sr. No.	Particulars	Brinjal	
		Amount	Per cent
	<b>Costs</b>		
1.	Hired human labour	24004.00	21.45
2.	Bullock labour	3070.00	2.74
3.	Machine labour	2364.00	2.11
4.	Seed	7800.00	6.97
5.	Manure	7962.00	7.13
6.	Fertilizer	4000.13	3.57
7.	Plant protection	3150.76	2.81
8.	Irrigation	4091.01	3.68
9.	Land revenue	71.43	0.06
10.	Incidental charge	310.26	0.27
11.	Interest on working capital @ 13%	2462.35	2.20
12.	Depreciation on capital assets @ 10%	704.64	0.62
<b>13.</b>	<b>Cost-A (item 1 to 12)</b>	<b>59990.58</b>	<b>53.61</b>
14.	Rental value of land	40360.73	36.07
15.	Interest on fixed capital @11%	775.11	0.69
<b>16.</b>	<b>Cost-B (cost-A+ item 14 to 15)</b>	<b>101126.42</b>	<b>90.37</b>
17.	Family human labour	10766.00	9.63
<b>18.</b>	<b>Cost-C (cost-B + item 17)</b>	<b>111892.42</b>	<b>100</b>

**Per Hectare Profitability of Brinjal Production**

Per hectare profitability of brinjal production was calculated and is presented in Table 3. The results revealed that, gross return from brinjal were Rs.242593.00. It was clear that, farm business income (GR-Cost A) was Rs.182602.42 in brinjal. It was seen from the table that, family labour income (GR-Cost-B) was Rs. 141466.58 in brinjal. It was observed that net profit (GR-Cost-C) in brinjal was Rs. 130700.58. It was found that output- input ratio in brinjal cultivation was 2.16. It implied that, when 1 rupee spend on brinjal production it would lead to give the return of Rs. 2.16 which indicated capital use efficiency in brinjal production. Per quintal cost of production in brinjal crop was Rs. 599.60.

**Table 3 Per hectare Profitability of Brinjal Production (Rs/ha)**

Sr.No.	Particular	Brinjal
1	Gross returns (Rs)	242593.00
2	Cost-A	59990.58
3	Cost-B	101126.42
4	Cost-C	111892.42
5	Farm Business income (Gross returns <b>minus</b> Cost-A)	182602.42
6	Family labour income (Gross returns <b>minus</b> Cost-B)	141466.58
7	Net profit (Gross returns <b>minus</b> Cost-C)	130700.58
8	Output-Input ratio (Gross returns divided by Cost-C)	2.16
9	Per quintal cost of production (Cost-C minus by produce value divided by main produce)	599.60

**CONCLUSION**

It is concluded from the present study that, the gross return from Brinjal were Rs.242593.00. It was clear that, farm business income (GR-Cost A) was Rs.182602.42 in Brinjal. It was seen from the table that, family labour income (GR-Cost-B) was Rs. 141466.58 in brinjal. It was observed that net profit (GR-Cost-C) in Brinjal was Rs. 130700.58. It was found that output- input ratio in Brinjal cultivation was 2.16. It implied that, when 1 rupee spend on Brinjal production it would lead to give the return of Rs. 2.16 which indicated capital use efficiency in Brinjal production. Per quintal cost of production in Brinjal crop was Rs. 599.60. So in the present study, area under Brinjal can be increased because of higher cost-effectiveness. In case of input utilization in Brinjal cultivation, most of growers face problem of high wage rates and difficulties in labour availability so, labour saving technology must be adopted such as use of weedicides, drip irrigation system etc.

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